

REMARKS

Applicants filed a Request for Continued Examination under 37 CFR 1.114 on October 17, 2006, after a final rejection. The Examiner had indicated in a telephone conversation with Applicants' attorney that she believed that the amendments submitted October 17, 2006, would overcome the final rejection; however the amendments were not entered so the Request for Continued Examination was filed in order to get the amendments entered. The claim amendments filed on October 17, 2006, have been entered, and the Examiner has withdrawn the finality of the office action.

In the amendment to the claims filed with the Request for Continued examination, Claim 10 was inadvertently listed as "original" although it showed that amendments were being made. To avoid any confusion as to whether the amendment to Claim 10 was made, the amendment to Claim 10 with the correct designation of "currently amended" is presented in the Listing of Claims above. Entry of the amendment is respectfully requested. Claim 10 as amended reads:

10. The method of claim 8 wherein the total weight of DITMPA additive comprises from about 0.02 to about 0.20 weight percent and the total weight of the tolutriazole comprises from about 0.05 to about 0.10 weight percent of the fully formulated lubricating oil composition.

The previous rejection with respect to Camenzind (US 5,922,657) has been withdrawn. The Examiner has stated that Applicants' arguments filed 10/17/06, with respect to Camenzind (US 5,922,657) have been considered and are persuasive and that it would not have been obvious to choose from within the three separate lists within Camenzind to arrive at the claimed invention. However the Examiner has now rejected the claims on new grounds.

Claim 1 is directed to:

1. An aviation turbine oil lubricant composition exhibiting enhanced load-carrying capacity and oxidative/corrosion stability said lubricant composition comprising a major portion of:

a) a synthetic ester based stock which is the esterification product of an aliphatic polyol containing 4 to 15 carbon atoms and from 2 to 8 esterifiable hydroxyl groups reacted with a carboxylic acid containing from 4 to 12 carbon atoms;

and a minor portion of:

- b) 3-(di-isobutoxy-thiophosphonylsulfanyl)-2-methyl-propionic acid (DITMPA);
- and
- c) tolutriazole.

Claim 8 relates to:

A method for enhancing the load-carrying capacity and the oxidative/corrosion stability of a synthetic ester base stock aviation turbine oil lubricant composition by adding to said lubricant an additive comprising DITMPA and tolutriazole.

Claim 18 relates to

An aviation turbine oil lubricant composition exhibiting enhanced load-carrying capacity and oxidative/corrosion stability said lubricant composition comprising:

- a) a synthetic ester based stock which is the esterification product of technical pentaerythritol and a mixture of C₄ to C₁₂ carboxylic acids;
- b) from about 0.01 to about 0.40 weight percent 3-(di-isobutoxy-thiophosphonylsulfanyl)-2-methyl-propionic acid (DITMPA); and
- c) from about 0.01 to about 0.40 weight percent tolutriazole.

Claims 1, 3-6, 8-11, and 13-20 have been rejected under 35 USC 103(a) as being obvious over Kim (US 5,856,280) in view of WO 02/053687 and the evidence disclosed in Meskers (US 6,348,440) that tolyltriazole is a synonym of tolutriazole (col. 7, lines 16-20).

The Examiner concedes that Kim does not disclose DITMPA. The Examiner takes the position that it would have been obvious to one of ordinary skill in the art that the β -dithiophosphorylated propionic acid additive of WO 02/053687 should be incorporated into the Kim composition to obtain a turbine oil that has excellent anti-wear properties, thermal oxidation stability, even under high speed and high load conditions. Meskers is cited as disclosing that tolyltriazole is a synonym for tolutriazole.

Applicants disagree and respectfully traverse this rejection.

It can be seen in Table 3 on page 11 of Applicants' specification when comparing the Cu weight loss result at 425° F for Examples 2 and 3 in which DITMPA and tolutriazole (TT) are used and Examples 4, 5, and 6, in which a composition other than DITMPA is used with tolutriazole, that the use of the combination of DITMPA and

tolutriazole provides an unexpected enhancement in the reduction of copper loss. This can also be seen when comparing Examples 2 and 3 with Example 11 which has no DITMPA.

Furthermore, it is clear from the results, for example, in Table 3 on page 11 of the specification that the compositions of the present invention provide surprisingly good results, which would not be expected from the disclosures of Kim and WO '687.

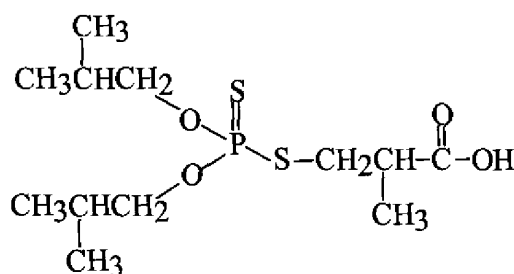
More specifically, Examples 2, 3, 8, 9, and 10 demonstrate that where a combination of DITMPA and tolutriazole is added to a lubricating composition, the amount of copper loss is significantly reduced compared to other compositions where DITMPA is not present, or alternatively is replaced by another compound, for example DMTD or SFAE, which are both known alternatives used in the art. Applicants submit that this is a showing of unexpected results which fully supports the patentability of the claims of the present invention.

In addition, reference is made to Table 1 on page 9 of the specification, where it can be seen that the compositions of Examples 2 and 3, which contain DITMPA and tolutriazole, demonstrate the highest load-carrying capacity when compared with Examples 1 and 4 to 6 (please note that Example 7 is a military specification, and therefore its composition is unknown).

Further, reference is made to Table 2 on page 10, where it can be seen that the compositions of Examples 2 and 3, which contain DITMPA and tolutriazole, are the only ones which demonstrate improved performance when compared to the composition of Example 1.

DITMPA is 3-(di-isobutoxy-thiophosphonylsulfanyl)-2-methyl-propionic acid which has the formula:

(DITMPA)



Kim does not disclose the use of DITMPA, and therefore cannot be considered to teach or suggest the benefits of combining DITMPA with tolutriazole with the surprising result of significantly improved corrosion/oxidative stability.

Toly triazole is only one of more than six corrosion inhibitors listed in Kim and is not exemplified. There is nothing in Kim which would lead one skilled in the art to choose toly triazole over the other compounds listed.

DITMPA has significant structural differences from the sulfur-containing compositions disclosed in Kim, and it would not be obvious to substitute DITMPA for the Kim sulfur-containing compositions with the expectation of achieving similar performance, particularly since Kim teaches that other sulfur-containing carboxylic acids are not effective.

It can be seen in Example 3 of Kim that other sulfur-containing carboxylic acid (SCCA) compounds did not produce the same effects as Kim's TDPA and TSA compounds. Furthermore, at col. 6, lines 9-10, Kim says that "Surprisingly, thiodiacetic acid (TDAA) was found to be ineffective as a deposit control additive." TDAA is closer structurally to Kim's preferred compound 3,3'-thiodipropionic acid (TDPA) than is Applicants DITMPA composition, yet Kim found TDAA to be ineffective. Clearly, it is unpredictable which sulfur-containing carboxylic acid compositions might be effective in Kim's turbine oil composition.

WO '687 does not pertain to an application such as aviation turbine oils and is clearly intended for an industrial hydraulic fluid. Although use as a turbine oil is mentioned this refers to an industrial turbine not an aviation turbine which operates at much higher temperatures. The tests conducted in WO '687 are at temperatures far below what would be needed for performance as a aviation turbine oil, and it would not be obvious that a composition which would perform at these lower temperatures could withstand the much higher temperatures required for an aviation turbine oil or would perform effectively at such higher temperatures.

Tolutriazole is disclosed as a non-essential additive in WO '687 on page 10, but is merely one compound in a list containing over 70 other compounds and there is nothing in WO '687 which would lead one skilled in the art to choose tolutriazole over the other compounds listed. The use of tolutriazole was not specifically exemplified in WO '687.

In contrast to the surprising results of the present invention, the Working Examples 1 and 2 compositions of WO '687 are only tested by means of the "Vickers V104C vane pump test" and "Vickers 35VQ-25A vane pump test", both of which merely

measure lubricity in terms of wear. Hence, neither test can teach, nor suggest the benefits which are obtained with regard to enhanced oxidative/corrosion stability, and reduction in copper metal loss, as demonstrated for the compositions of the present invention.

Applicants submit that the Examiner is using hindsight with Applicants' specification as a guide to pick and choose among references in an attempt to reconstruct Applicants' claimed invention, which is impermissible. Given the showing in Kim that it is unpredictable which sulfur-containing carboxylic acid compositions would be effective and the fact that WO' 687 does not relate to aviation turbine oils and only conducts testing at temperatures far below what would be needed for aviation turbine oil application, one skilled in the art would not be motivated to substitute DITMPA for the Kim sulfur-containing compositions with the expectation of achieving similar performance, particularly since Kim demonstrates that other sulfur-containing carboxylic acids which are closer in structure to Kim's preferred compositions are not effective.


Applicants submit that the claimed invention as a whole is not obvious in view of Kim and WO '687 and is patentable thereover.

Reconsideration, allowance of all claims, and passage of the application to issue are respectfully requested.

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Respectfully submitted,



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